Munich Center for Quantum
Science and Technology

Munich Center for Quantum Science & Technology

Cluster of Excellence funded by German Research Foundation (DFG)

MCQST

about 60 research groups
from all fields in science

mathematics

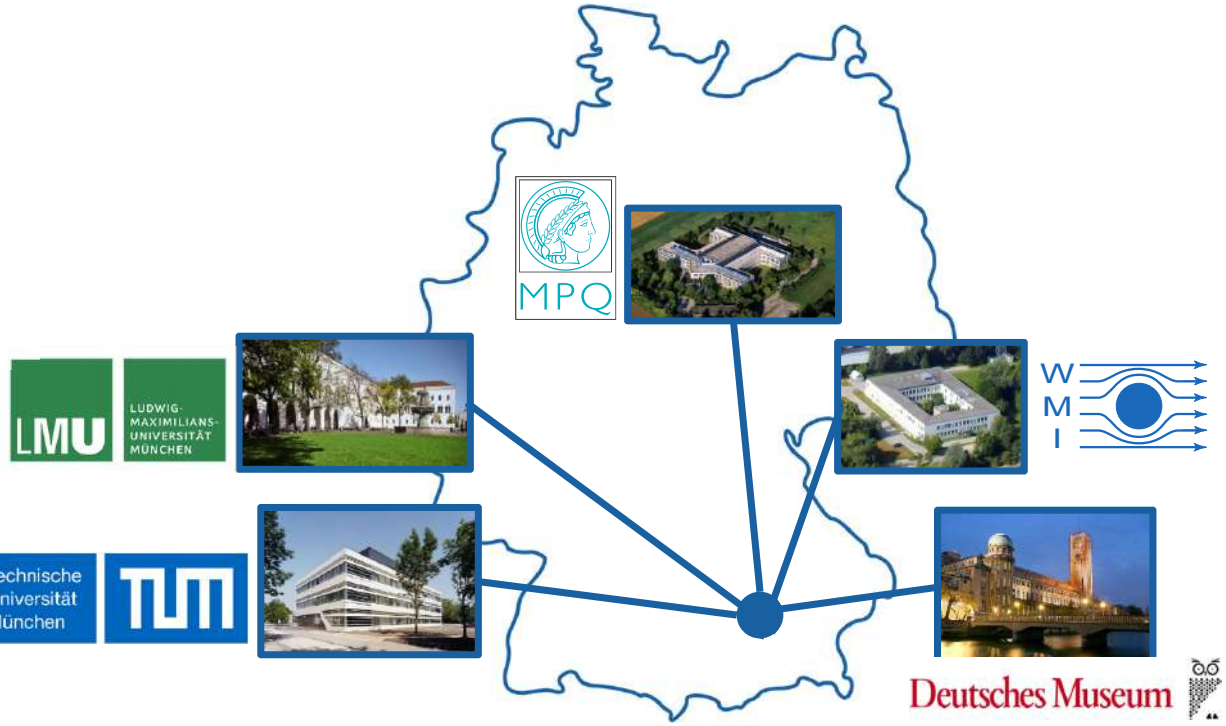
physics

chemistry

electrical engineering

computer science

DFG Deutsche Forschungsgemeinschaft



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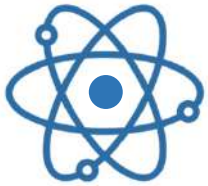

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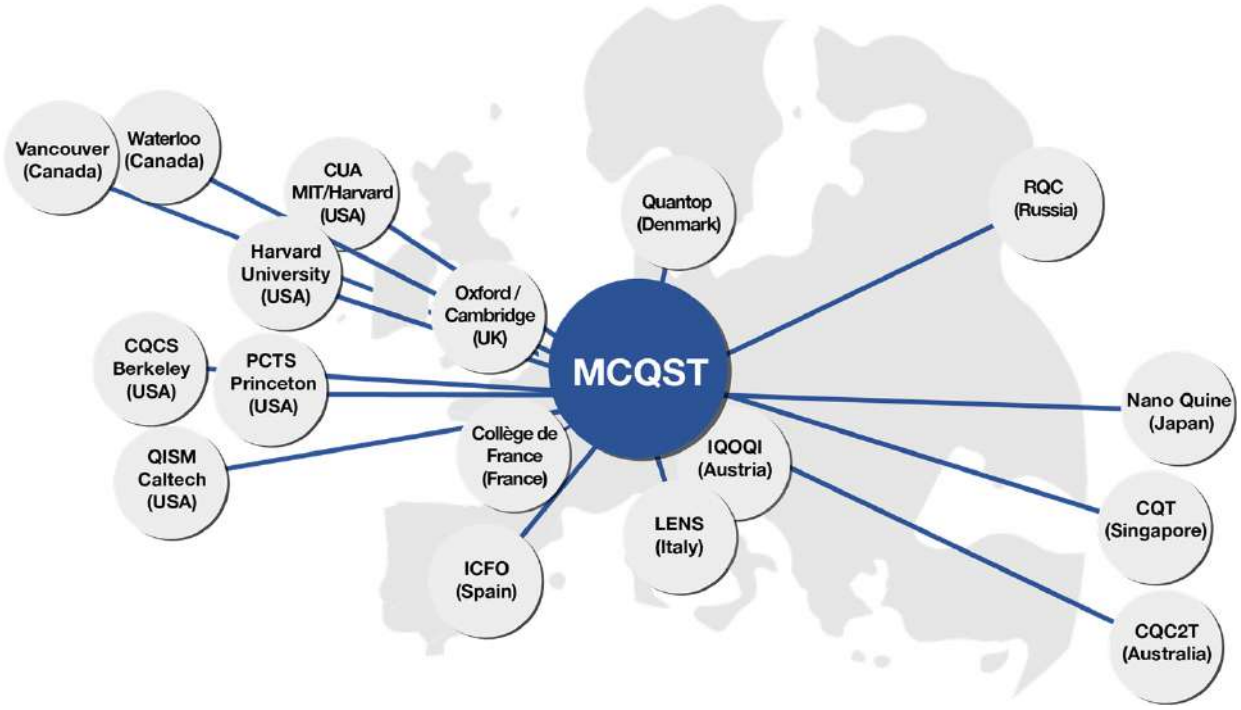


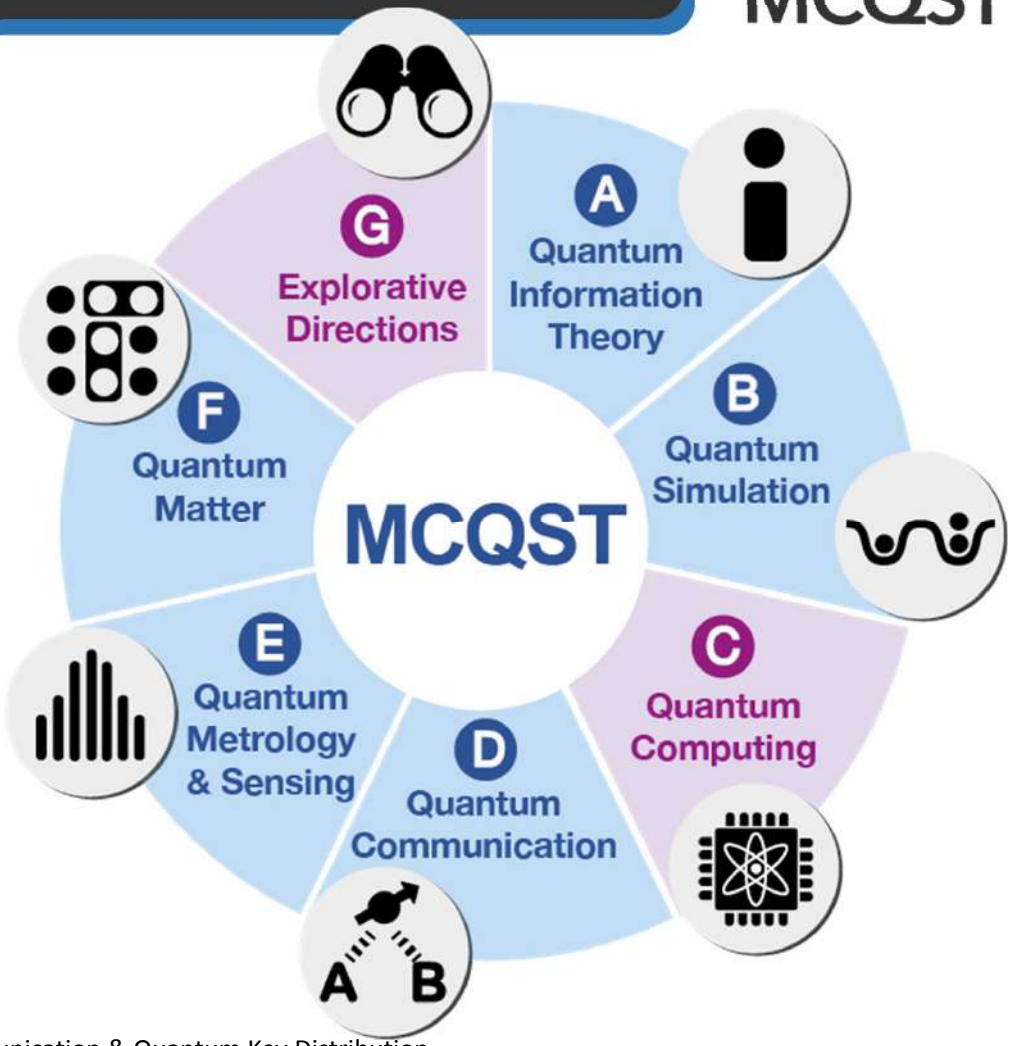
Seven Research Units

Structured long-term research program

MCQST

Discover and understand the novel and unifying concepts in the interdisciplinary research fields of Quantum Science and Technology.

Make them tangible and practical, to develop the extraordinary applications within reach by building next-generation quantum devices.



Support Programs

for all career levels

Events organized by MCQST

For scientists from academia & industry and the general public

Quantum Science Slam

Teachers Training

Laboratory for High School Kids

Monthly Colloquium

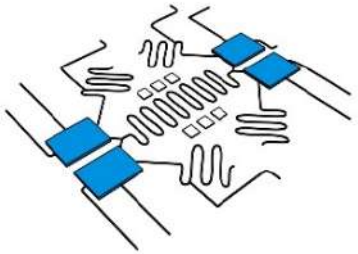
Conferences

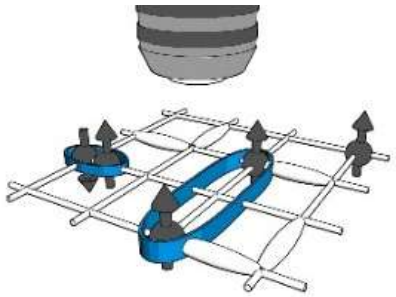
Guest Program

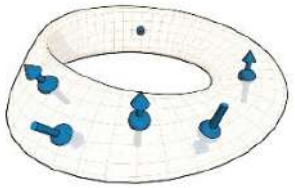
Public Lectures

Social events

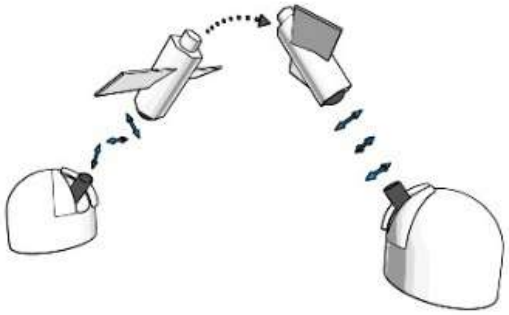
Key Goals for Applications







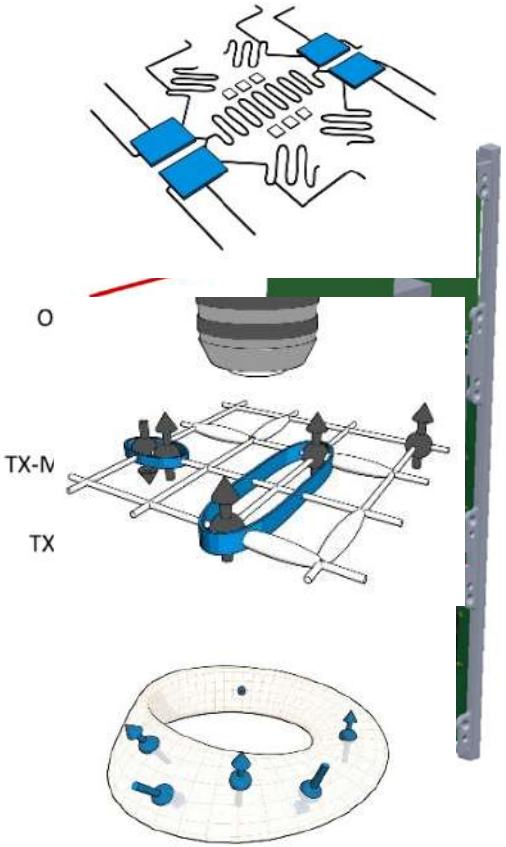
- **Scalable quantum computers**
  key components, exploration of novel architectures and software
- **Next generation quantum simulators**
  >10k qubits, programmable, improved control
- **Quantum communication networks**
  secure and scalable
- **Hybrid quantum systems**
  interfacing quantum platforms, coupled topological excitations
- **Quantum control techniques**
  from many-body to medical applications
- **Quantum light sources & quantum sensors**
  used in metrology, quantum networks, solid-state systems up to living cells
- **Quantum materials**
  tailored properties, novel qubits



Quantum Key Distribution

- free space systems
  from handhelds to satelite links
- full integration into classical communication systems

Key Goals for Applications



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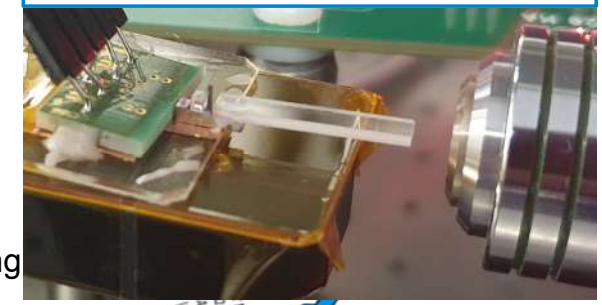
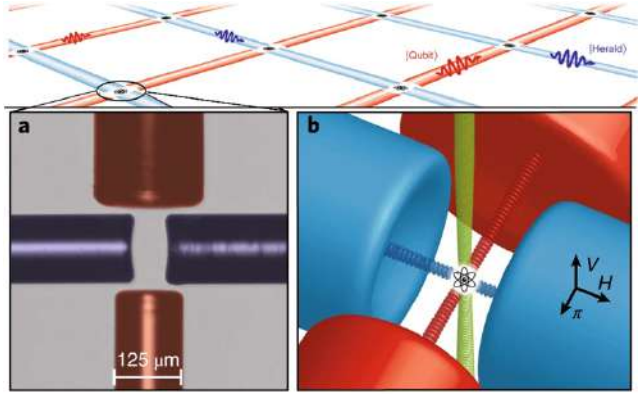
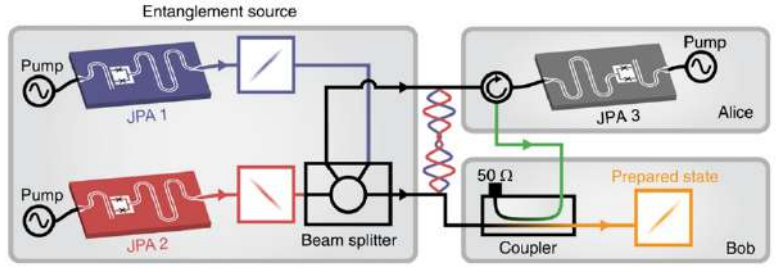


towards Quantum Networks

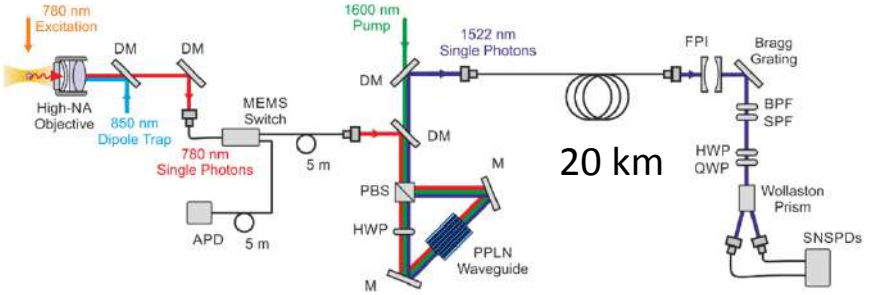
- Quantum network nodes & memories
  M. Brekenfeld et al. Nature Physics **16**, 647 (2020)



- Quantum communication with µ-waves
  S. Pogorzalek et al., Nature Comm **10**, 2604 (2019)



- Distribution of entanglement over 20 km
  T. van Leent et al., Phys. Rev. Lett. **124**, 010510 (2020)



Science-meets-Industry

Connect academic and industrial research

MCQST

already in contact with

a one-stop-shop for

Information
Consultation
Collaboration

in quantum technologies

MCQST

LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Technische Universität München

MPQ

WMI

Deutsches Museum

where can we help? where can we cooperate?

let us know → www.mcqst.de

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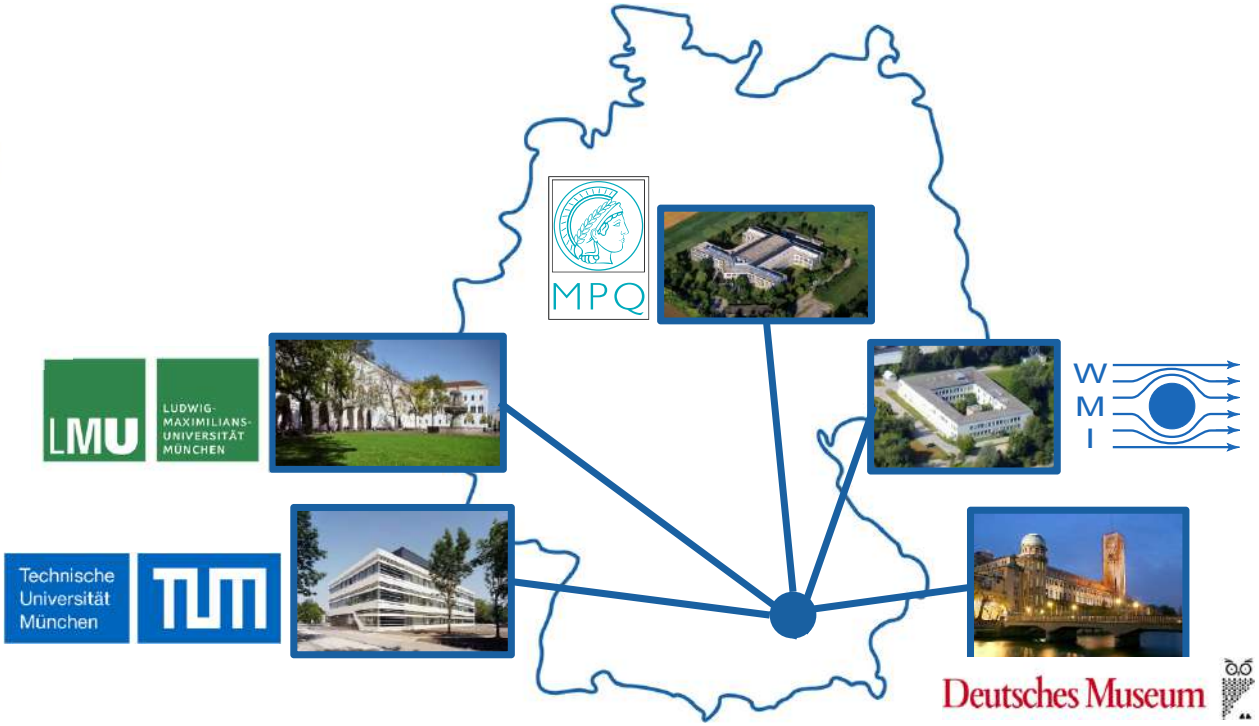

Mission Statement

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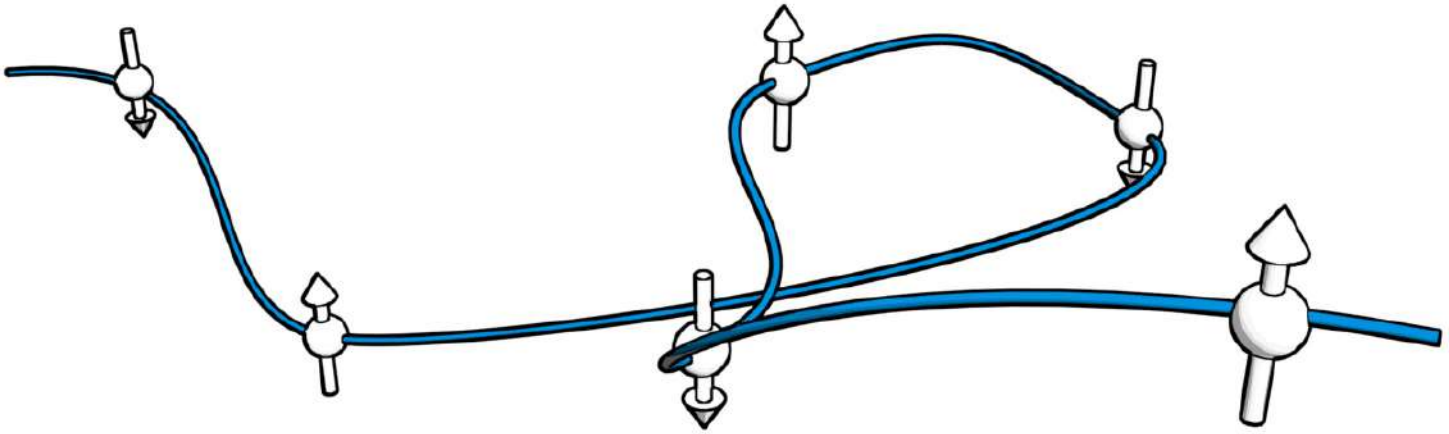


Education and Training

From the Bachelor‘s level up to the postdoctoral level

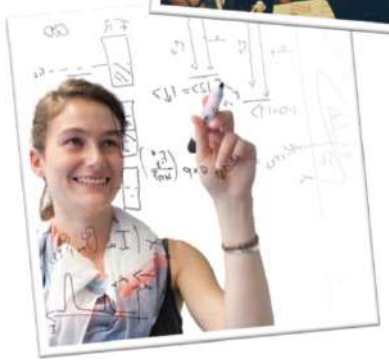
Bachelor’s Summer Student Program

- summer program for international students
- introduction to QST in Munich
- courses, workshops & lab projects

Master’s Course on QST

Starting in fall 2020

- interdisciplinary: physics, chemistry, electrical engineering, computer science, mathematics
- joint program of LMU and TUM
- educate scientists and engineers



Graduate Program

- research schools: IMPRS-QST and ExQM, over 70 graduate students
- student retreat program & annual summer school
- support for transition phase towards postdoctoral research

Support of Young Investigators

Two in 2019

Junior Researcher START Fellowships

- independence: 2-year-fellowships with own budget of 300k€
- dedicated mentoring by senior scientists

Seed Funding

- allows rapid response to ideas and developments
- more than 20% of total budget

8 projects in 2019

Two in 2019

Distinguished Post-Doc Fellowship

- Program for excellent female researcher
- two years funding:
  first by MCQST, second by hosting group

Training, Mentoring & Networking

- individual coaching
- local & international mentors
- networking lunchs
- Women in QST series

Events organized by MCQST

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More about MCQST

www.mcqst.de

Get entangled with us!